paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Reconsideration is requested in view of this Amendment.

Claim 28 has been amended to delete the recitation "for the prevention of insulin dependent diabetes". The subject matter of claim 28 may be used as a nutrient and the deletion of the term "for the prevention of insulin dependent diabetes" avoids the basis for the previous rejection of claim 28 and the claims that are dependent on claim 28.

Claims 35 and 36 have been amended to insert the phrase -- inhibition of the inductive effect of beta casein and its fragments-- on insulin dependent diabetes. The term "prevention of" with respect to insulin dependent diabetes has been deleted. The basis for this amendment is found in the specification at page 4, lines 18-24 where it is disclosed that certain caseins are responsible for the "induction of an immune response towards beta casein". The specification also discloses the effect on the prevention of insulin dependent diabetes when beta casein is avoided in the diet of infants and newborns. For these reasons, it is believed that the amendatory language is supported by the original disclosure.

The present ground of rejection is based on a statute that requires an applicant for a patent to provide sufficient information that would enable one skilled in the art to make and use the invention. No issues has been raised with regard to the detailed information as to how to make the product of the invention. The information as to how to use the product is implicit in the disclosure that the modified casein is used as an infant food in the same manner that unmodified casein is used. Thus, there cannot be any serious question regarding the fact

that the applicant has taught the art how to make and use the invention.

The thrust of the Examiner's arguments is that "the specification does not provide any teachings that show that administration of the product as claimed would prevent or inhibit the onset of IDDM".

The relationship of 35 U.S.C.§101 and 35 U.S.C.§112, first paragraph is spelled out in MPEP§2164.07. All that is required by 35 U.S.C.§101 is that some use for the claimed invention must be set forth in the specification. This has been done in the present specification. The requirements of 35 U.S.C.§112, first paragraph may only be properly used to reject patent claims if one skilled in the art could not practice the claimed invention based on the disclosure. The Examiner has urged that an unreasonable amount of experimentation would be required for one to "make and/or use the claimed invention and methods of using the same" (Office Action, page 6).

The Examiner's contentions with regard to an unreasonable amount of experimentation have nothing to do with the directions for use of the claimed invention. The invention is a food for newborns and infants and since the prior art methods of feeding of casein based foods to newborns and infants is completely analogous to the feeding of the modified caseins of the present invention, no undue experimentation is required to use the claimed invention.

The decision of In re Wands, 8 USPQ2d 1400 (Fed. Cir. 1988) listed eight factors to be considered in connection the question of enablement: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability of the art, and (8) the breadth of the claims. With regard to factor (1) it is submitted that there is little or no experimentation to provide the

composition of the invention to a newborn or infant as a food according to the specification. Factor (2) relates to the amount of direction or guidance. As noted previously, the invention is practiced by feeding a specified composition to a specific and identifiable class. The concern of factor (3) does not arise, because it is not necessary for the specification to recite that which is already known, i.e how to feed an infant. The nature of the invention (Factor 4) does not cause undue experimentation because the invention involves feeding a specified foodstuff. The state of the art (Factor 5) does not provide any basis on which to urge that undue experimentation is required to practice the invention and the level of skill in the art (Factor 6), which is related to the field of infant feeding an nutrition is quite high with many persons having postgraduate degrees with many years of practical experience. Factor 7 relates to predictability in the art which does exist in the present application because the inventor has disclosed in the application that beta casein shows sequence homology with a specific insulin producing protein in the pancreas (page 2,lines 6-9). In newborns, a diet containing immunogenic caseins has been associated with an increased incidence of insulin dependent diabetes as documented in the literature that has previously been provided to the Examiner. This information provides strong evidence that the method is useful. It should be noted that the mention of predictability in connection with the first paragraph of 35 U.S.C.§112, has to do with the "make" requirement where consideration may be given to uncertainty or chance which arises when one tries to make a new chemical compound or a new protein and the information in the specification is inadequate. It does not relate to the operability or usefulness of an invention which is an admitted fact in the present application because of the absence of any rejection under 35 U.S.C.§101.

The breadth of the claims is a Wands factor (Factor 8) that does not arise in the present application because the claims are specific to the use of an ascertainable class of materials in an

identified host (newborns and infants). If there is no issue as to operability, there can be no issue of undue breadth in the present application because if the method were extended to hosts in which it was not workable or the technique of administration (feeding) was extended to include methods that encompassed an undue breadth of techniques of administration,the claims would be directed to inoperable methods and would not comply with 35 U.S.C.§101.

The Examiner has not cited any missing information regarding the "how to make and use" requirements of U.S.C.§112, first paragraph. The question of the operability of the claimed method is not properly raised under 35 U.S.C.§112, first paragraph unless reasons can be given that are directed to the lack of information as to how to carry out the invention.

In order to show usefulness, it is not necessary to show statistically significant data relating to the alleged use. Nelson v. Bowler, 206 USPQ 881,883 (CCPA 1980). If it is not necessary to show statistically significant data to show usefulness, statistically significant data should not be required for the purpose of showing compliance with 35 U.S.C.§112, first paragraph.

The Applicant wishes the Examiner to consider the following materials, as showing the state of the art, with regard to the present invention:

1. Research Grant 1 RO1 HD40364-01 of $1.8 million from the NIH to study whether a cow's milk hydrolysate (not containing beta casein) is able to prevent the onset of insulin dependent diabetes.

2. J. Endocrinology, (2003) 176, preprint of peer reviewed article which reports the enhanced cellular immune response to bovine beta casein in Type 1 diabetes patients.

3. Hormone and Metabolic Res. (2002) 34,455, peer reviewed article which reports on the development of Type 1 diabetes by a genetic background through exposure to cows milk.

The research grant from the National Institutes of Health is evidence that the applicant has established that the subject of that trial is reasonably predictive of having the asserted therapeutic utility See MPEP §2107.02. With regard to Wands Factor 7, the NIH trial should be accepted as a sufficient basis for the withdrawal of the Examiner's statements that:

> [T]he Examiner has presented the unpredictable state of the art with regard to the various factors that could be potentially involved in the pathogenisis of IDDM ...(emphasis added)
>
> [T]he present rejection is directed to the lack of teachings, guidance or working examples provided by the specification for showing that administration of the claimed dietary product would prevent IDDM in an individual (emphasis added).

Since the Examiner has raised the question of whether or not the administration of the claimed dietary product would prevent IDDM in an individual, the NIH study should be considered as being probative of a prima facie case that the claimed dietary product prevents IDDM. NIH studies, which require the expenditure of government funds, are only carried out if the leading experts in the field believe that the preliminary data shows that the method is expected to be successful.

Publications 2 and 3 provide additional evidence of peer acceptance of the invention and also provide data that corroborates the existence of a scientific basis on which the results provided by the invention can be explained. For these reasons, it is requested that the amended claims be favorably considered.

An early and favorable action is earnestly solicited.

Respectfully submitted,

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Marked up copy of amended claims:

28. (amended) A dietary or pharmaceutical product [for the prevention of insulin-dependent diabetes], said product comprising at least one modified bovine beta-casein or fragments thereof selected from the group consisting of recombinant or synthetic caseins which do not contain the sequences: Pro-Gly-Pro-Ile-His (SEQ ID NO:1) and Pro-Gly-Pro-Ile-Pro (SEQ ID NO:2).

33. (amended) A method for the inhibition of the inductive effect of beta casein and its fragments on [prevention of] insulin-dependent diabetes comprising the step of administering to newborns and infants an immunogenic infant formula free of caseins which exhibits molecular mimicry with protein GLUT2.

35. (amended) A method for the inhibition of the inductive effect of beta casein and its fragments on [prevention of] insulin-dependent diabetes in infants and newborns comprising the step of administering to newborns and infants an infant formula comprising at least one casein or fragments thereof selected from the group consisting of naturally occurring, recombinant, synthetic animal or vegetable caseins not containing the sequences: Pro-Gly-Pro-Ile-His (SEQ ID NO:1) and Pro-Gly-Pro-Ile-Pro (SEQ ID NO:2).

36. A method for the inhibition of the inductive effect of beta casein and its fragments on [prevention of] insulin-dependent diabetes in infants and newborns comprising the administration to newborns and infants a milk which does not contain caseins containing the sequences: Pro-Gly-Pro-Ile-His (SEQ ID NO:1) and Pro-Gly-Pro-Ile-Pro (SEQ ID NO:2), said casein being obtained by the following steps: providing a vector suitable for the expression of the casein; transfecting said vector in a cell selected from the group consisting of prokaryotic cell, unicellular eukaryotic cell or a cell derived from a multi cellular organism; and isolating and purifying said casein.